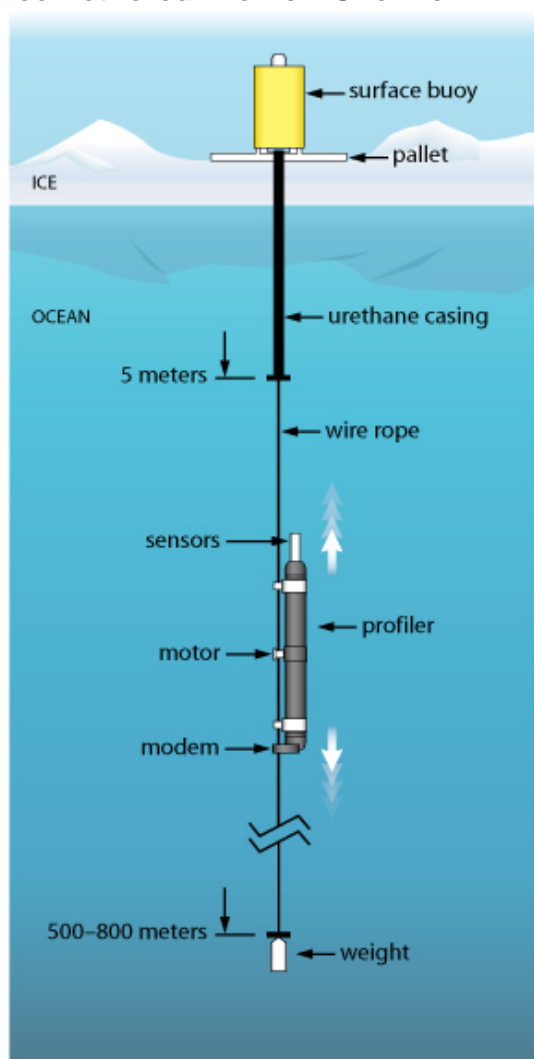


Ice-Tethered Profiler: Overview



Ice-Tethered Profiler schematic

Recent studies indicate that the Arctic may be both a sensitive indicator and an active agent of climate variability and change. While progress has been made in understanding the Arctic's coupled atmosphere-ice-ocean system, documentation of its evolution has been hindered by a sparse data archive. This observational gap represents a critical shortcoming of the 'global' ocean observing system. Addressing this gap, a new instrument, the 'Ice-Tethered Profiler' (ITP) was conceived to repeatedly sample the properties of the ice-covered Arctic Ocean at high vertical resolution over time periods of up to three years. Analogous to the international [Argo float program](#) that is employing autonomous profiling floats to return real-time seawater property data from the temperate oceans, we are working together with fellow North American, European and Asian investigators to maintain a loose array of ITPs and other similar instruments throughout the ice-covered Arctic. We hope that the analysis of data from these instruments will lead to better understanding of the

Arctic Ocean's response and role in global climate change.

The ITP system consists of a small surface capsule that sits atop an ice flow and supports a plastic-jacketed wire rope tether that extends through the ice and down into the ocean, ending with a weight (intended to keep the wire vertical). A cylindrical underwater instrument (in shape and size much like an Argo float) mounts on this tether and cycles vertically along it, carrying oceanographic sensors through the water column. Water property data are telemetered from the ITP to shore in near-real time.

This web site provides information about the ITP technology, gives the status of systems presently deployed, hosts an accessible archive of data collected by ITPs and showcases scientific findings based on ITP data.



[Enlarge Image](#)

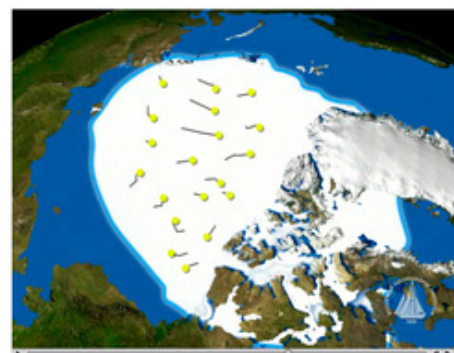
ITP underwater profiling unit being attached to the wire rope tether. (Chris Linder, WHOI)



[Enlarge Image](#)

An Ice-Based Observatory (IBO) consisting of an ITP and Ice Mass Balance Buoy (IMB). (Chris Linder, WHOI)

Related Multimedia



How the ITP Works

Movie showing the operation of an ITP system in the field and a vision for an array of ITPs sampling the ice-covered Arctic Ocean.

Animation by Tim Silva, Woods Hole Oceanographic Institution

[» View Video \(Quicktime\)](#)

Acknowledgments

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Ice-Tethered Profilers Featured on NBC Learn Program

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